Remarks

Claims 1, 3-17, 28, 32, 34 and 36 are pending in this application. Claim 1 is amended and claim 2 is cancelled herein.

Applicant believes that the claims as amended are clearly distinguishable over all of the references of record. Reconsideration of claims 1, 3-17, 28, 32, 34 and 36 in light of the amendments and arguments below is respectfully requested.

NO NEW MATTER IS INTRODUCED BY THE AMENDMENTS TO THE CLAIMS.

No new matter is presented by way of the amendments to claim 1. Literal support for the amendments to claim 1 is found, e.g., in claim 2 as previously presented, in Example 9 in the paragraph bridging pages 47-48, in SEQ ID NO:14 and in FIGURE 2, and in the subsequent Examples.

Claims 1 is amended to expedite prosecution. Nothing in these amendments is to be construed to indicate agreement with any rejection or argument of record. Applicant expressly reserves the right to prosecute subject matter omitted from the claims as amended in a continuation application.

CONSIDERATION OF THE INFORMATION DISCLOSURE STATEMENT

Applicant thanks the Examiner for his consideration of the Information Disclosure Statement (IDS) filed concurrently with the RCE on February 17, 2005. Receipt of the signed copy of the Form 1449 is acknowledged.

THE CLAIMS AS AMENDED ARE NOT INDEFINITE

Claims 1-17, 28, 32, 34 and 36 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite on the grounds that the phrase "engineered Japanese Encephalitis Virus (JEV) signal sequence" is vague and indefinite because it does not set forth any salient structural/functional characteristics. To the extent that the rejection is applied to the claims as amended, Applicant traverses.

As amended, claim 1 recites: "an engineered Japanese Encephalitis Virus (JEV) signal sequence, *which engineered JEV signal sequence comprises SEQ ID NO:14.*" Thus, the currently claimed signal sequence possesses the structural characteristics of the nucleotide sequence of SEQ ID NO:14. Accordingly, there is no ambiguity whatsoever as to the functional characteristics of the engineered JEV signal sequence, and claim 1, and claims 3-17, 28, 32, 34 and 36 dependent therefrom, are both clear and definite, and meet the statutory requirement of 35 U.S.C. § 112. The rejection should therefore be withdrawn.

THE CLAIMS ARE NOT OBVIOUS WITH RESPECT TO YASUI, KOCHEL AND/OR IVY.

Claims 1-17, 28, 32, 34 and 36 were rejected under 35 U.S.C. §103(a), as allegedly unpatentable over Yasui *et al.* (1990) in view of Kochel *et al.* (2002) and Ivy *et al.* (2000). To the extent that the rejection is applied to the claims as amended, Applicant traverses.

At least three basic requirements must be met to establish a *prima facie* case of obviousness. First, the Office must show how the prior art reference must contain all of the limitations of the claims. M.P.E.P. § 2143.03. Second, the Office must establish that there was a motivation to modify the reference or combine the teachings to produce the claimed invention. M.P.E.P. § 2143.01. Third, the Office must demonstrate that there was a reasonable expectation of success for achieving the invention in the prior art. M.P.E.P. § 2143.02. The teaching or suggestion to combine and the expectation of success must both be found in the prior art and not based on an Applicant's disclosure. M.P.E.P. § 2142.

The prior art does not teach all of the limitations of the claimed invention.

In light of the amendments to the claims, Applicant believes that the grounds for rejection are rendered moot. None of the cited references (or any other reference of record), alone or in any combination, disclose all of the elements of the amended claims. Claim 1 is directed to a nucleic acid that includes a single transcription unit with "an engineered Japanese Encephalitis Virus (JEV) signal sequence, *which engineered JEV signal sequence comprises SEQ ID NO:14,* and an immunogenic flavivirus antigen of a flavivirus other than JEV..." None of the cited references teaches or suggests a single transcription unit encoding a JEV signal sequence

comprising the amino acid sequence of SEQ ID NO:14 and an immunogenic antigen of a different flavivirus.

For example, Yasui *et al.* (1990) does not suggest that any signal sequence can be used other than that of *the wild type signal sequence corresponding to the same JEV as the M and E antigens to be expressed.* Thus, Yasui *et al.* does not teach the elements of Claim 1, or any claims dependent therefrom.

Kochel (USPN 6,455,509) describes nucleic acids in which the signal sequence is derived from the same Dengue serotype virus as the M and E antigens. To produce a vaccine capable of conferring protection to different serotypes of virus, Kochel teaches combining different nucleic acids, each of which includes a signal sequence and antigen from a *single* serotype of Dengue virus. Kochel does not disclose a transcription unit with an engineered JEV signal sequence in combination with an antigen of Dengue (or any other) virus. Thus, Kochel cannot reasonably be interpreted as teaching the elements of the claims.

Ivy (USPN 6,136,561) describes using one of very few specific leader sequences selected to give sufficient expression of a truncated E protein in cultured cells. The only flavivirus signal sequence that is suggested or taught by Ivy is the signal sequence from the same virus as that from which the E protein-encoding sequence originates. Nowhere does Ivy describe using a signal sequence from a different flavivirus than the one that provides the portion of E protein encoded by the construct. In particular, Ivy does not disclose or suggest the use of a JEV signal sequence with the amino acid sequence of SEQ ID NO:14 (or any other engineered JEV signal sequence) in combination with a flavivirus antigen (such as the E protein) of another flavivirus. Accordingly, Ivy cannot be interpreted as disclosing the claimed invention.

In conclusion, none of the cited references, whether considered singly or in any combination, teaches or suggests a nucleic acid that encodes an engineered JEV signal sequence with the amino acid sequence of SEQ ID NO:14. Thus, the cited references do not teach all of the elements of the claims as amended and the rejection must be withdrawn.

There is no motivation in the cited references to produce a transcription unit including the engineered JEV signal sequence of SEQ ID NO:14 and an immunogenic antigen from another flavivirus.

As discussed above, the cited references do not teach the elements of the claims. In particular none of the cited references discloses or suggests the engineered JEV signal sequence of SEQ ID NO:14. In the absence of such a disclosure, none of the cited references can reasonably be interpreted as providing the motivation or suggestion to combine an engineered JEV signal sequence (let alone the specified sequence) with any other elements of the claims.

No reasonable expectation of success existed for making a transcription unit with an engineered JEV signal sequence in combination with an antigen of another flavivirus.

As previously discussed, the cited references do not provide any suggestion of using an engineered JEV signal sequence with the amino acid sequence of SEQ ID NO:14. In the absence of any such disclosure, there can be no reasonable expectation that combining a signal sequence having the amino acid sequence of SEQ ID NO:14 with any other teaching would provide any desirable result, including the disclosed result of obtaining protective immunity to a flavivirus upon administration to a subject of the claimed nucleic acid.

In light of the preceding remarks, Applicant respectfully submits that the elements of a *prima facie* case of obviousness with respect to the amended claims are not satisfied by the cited references-Yasui, Kochel and Ivy-in any combination. Therefore, Applicant requests that the rejection of claim 1 as amended, and claims 3-17, 28, 32, 34 and 36 be withdrawn.

CONCLUSION

It is respectfully submitted that the pending claims are in condition for allowance. If any issues remain, the Examiner is again requested to contact the undersigned attorney prior to issuance of the next Office action, in order to arrange a telephonic interview. This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request. It is believed that a brief discussion of the merits of the present application may expedite prosecution, thus, an interview is appropriate under MPEP 713.09. Applicant submits the foregoing Amendment so that the Examiner may fully evaluate Applicant's position, thereby enabling any such interview to be more focused.

Respectfully submitted,

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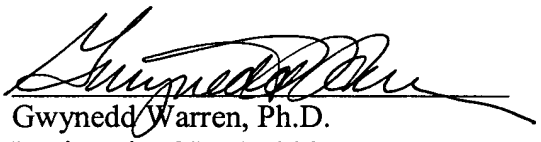
By 
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